Catalogue of American Amphibians and Reptiles.

Walley, H.D. and C.M. Eckerman. 1999. *Heterodon nasicus*.

Heterodon nasicus Baird and Girard
Western Hognose Snake

Heterodon nasicum: Baird and Girard 1852a:70. Specific epithet in error (Baird and Girard 1852b).
Heterodon nasicus Baird and Girard 1852b:352. Type locality, "Texas." Holotype, National Museum of Natural History (USNM) 1272, now lost, juvenile, received from S. Churchill in February 1838. Neotype, USNM 1249, adult female, collected by A.C.V. Schott during the U.S. Mexican Boundary Survey under the command of Lieut. Nathaniel Michler of the Corps of Topographical Engineers in 1851 or early 1852 (Webb and Eckerman 1998)(examined by CME). See Remarks.
Heterodon catesbyi Günther 1858:83. Type locality, "Texas." British Museum of Natural History (BMNH) 1946.1.4.27 (part)(not examined by authors). See Remarks.

• **CONTENT.** Two subspecies are recognized: *nasicus* and *kennerlyi* (see Remarks).

• **DEFINITION.** *Heterodon nasicus* is a medium to small, heavy-bodied species (males to 663 mm TL, females to 1540 mm) with a brown, brownish gray, or tan ground color. A series of 23–52 grayish brown, deep cinnamon, or chocolate brown dorsal blotches occur on the dorsum and alternate with rows of smaller, similarly colored spots on the sides. The head pattern consists of a dark band across the posterior azygous scales, the anterior edge of frontals, and the supraoculars, as well as a broad dark band from the eye to the angle of mouth. A middorsal and two lateral elongated nuchal blotches extend forward to the parietal scales. The venter is usually black with yellow blotches, although it may be checkered with irregular white markings or appear pale with large black blotches.

Two to 28 small, irregular azygous scales separate the prefrontals from the frontal and the internasals from the rostral. The rostral is sharply upturned and concave dorsally. The pre-, post-, and subocular scales form an ocular ring and range in number from 9–13. The anterior temporals number 2–5, and posterior temporals 3–7. Infralabials number 9–13, usually 10–11. The two large anterior chin shields are broadly in contact, whereas the posterior chin shields are reduced in size or absent. The anal plate (cloacal scute) and subcaudals are divided. Ventrals range from 129–147 in males and 139–156 in females. Subcaudals range from 35–50 in males and 26–41 in females. The dorsal body scales are keeled, with 21–26 rows anteriorly, 19–26 rows at midbody, and 16–23 rows anterior to the cloaca. The maxilla is short and deep, with the mesial process curving posteriorly toward the posterior process. About ten teeth occur on the maxilla, four on the palatine, nine on the pterygoid, and fourteen on the dentary.

• **DESCRIPTIONS.** Platt (1969) and Eckerman (1996) provided detailed descriptions of scutellation, color pattern, dentition, hemipenis, and sexual dimorphism, along with a discussion of geographical variation in each of these characters. Accounts in the literature that give fair to good descriptions include those of Baird and Girard (1852a, 1853a,b,), Baird (1859a), Coues and Yarrow (1878), Cope (1892, 1900), Brown (1901), Van Denburgh (1922), Woodbury (1931), Hudson (1942), Breckenridge (1944), Smith (1950), Stebbins (1954), Smith (1956), Wright and Wright (1957), Smith (1961), Anderson (1965), Wheeler and Wheeler (1966), Webb (1970), Froom (1972), Collins (1974), Shaw and Campbell (1974), Conant (1975), Baxter and Stone (1980), Collins (1982), Cook (1984), Tennant (1984, 1985), Stebbins (1985), Johnson (1987),

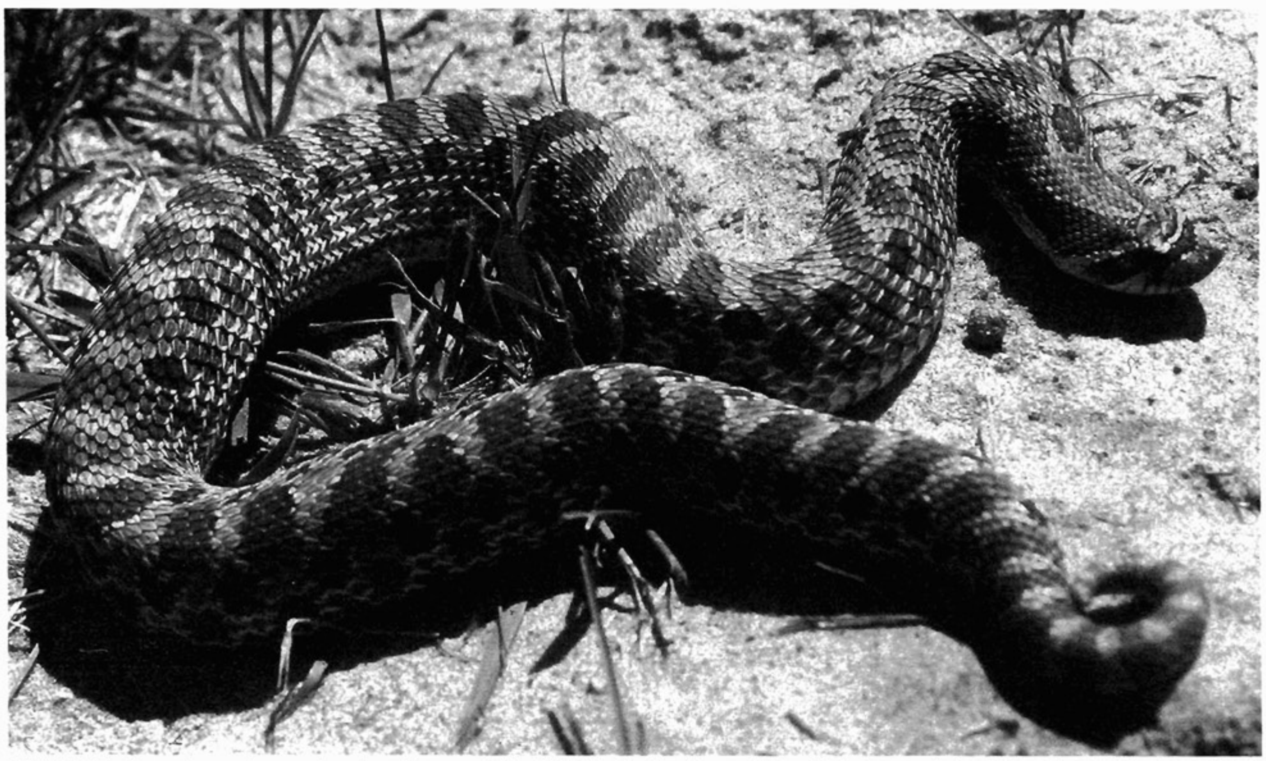
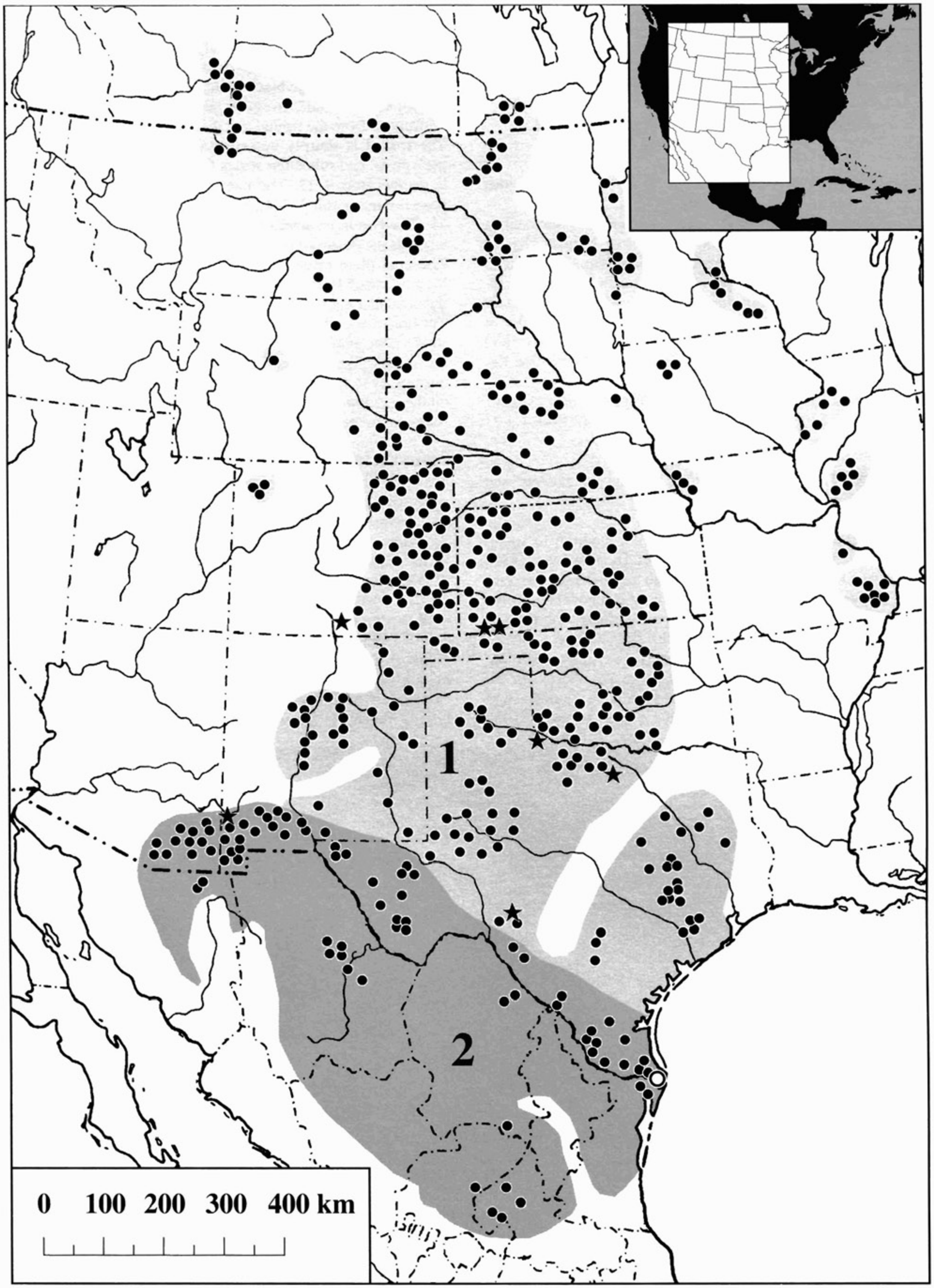


FIGURE 1. *Heterodon nasicus nasicus* from Crescent Lake, N.W.R., Garden County, Nebraska (photograph by Christopher Phillips, June 1997).



MAP. Distribution of *Heterodon nasicus*. The type locality of the nominate subspecies is too imprecise to plot, that of *H. n. kennerlyi* is indicated by the circle; other known localities are indicated by dots (some symbols denote two or more proximate localities); stars mark fossil localities.

Ernst and Barbour (1989), Conant and Collins (1991, 1998), Collins (1993), Oldfield and Moriarty (1994), Busby et al. (1996), and Degenhardt et al. (1996). The karyotype (2N = 36, with 16 macrochromosomes and 20 microchromosomes) was described by Baker et al. (1972).

• **ILLUSTRATIONS.** Lithographic drawings of the entire body, and dorsal, lateral, and ventral views of the head and neck of *Heterodon n. nasicus* and *H. n. kennerlyi* were provided by Baird (1859a,b), Baird and Girard (1852a), Jan and Sordelli (1865), Duméril, Bocourt, and Mocquard (1870), and Garman (1883). Hatchlings were illustrated in Rehak (1990) and Mattison (1992a). Kroll (1976) and Tennant (1984, 1985) included illustrations of rear-fang structure, and Meylan (1982) illustrated the pterygoid. Kroll (1976) showed cross sections of salivary, Harderian, supralabial, and seromucous glands. Platt (1969) provided black and white illustrations of cross sections of testes and kidneys of mature males, seminiferous tubules, and preterminal segments of the renal tubules. Cope (1900) illustrated hemipenal structure. Froom (1972), Shaw and Campbell (1974), Conant (1975), Behler and King (1979), Walls (1979), Preston (1982), Smith and Brodie (1982), Brown (1985), Tennant (1984, 1985), Christiansen and Bailey (1986), Lowe et al. (1986), Mehrtens (1987), Obst et al. (1988), Campbell and Lamar (1989), Capula (1989), Coborn (1991), Conant and Collins (1991, 1998), Mattison (1992a), Collins (1993), Russell and Bauer (1993), Sievert and Sievert (1993), Oldfield and Moriarty (1994), Busby et al. (1996), and Cogger and Zweifel (1998) provided color illustrations and/or photographs of dorsolateral views of *H. n. nasicus* or *H. n. kennerlyi.* Death feigning was figured in Platt (1969), Walls (1979), Obst. et al. (1988), and Collins and Collins (1991, 1998). Color illustrations of eggs and hatchling are in Tennant (1985), Rehak (1990), and Mattison (1992b). Black and White illustrations are in Van Denburgh (1922), Ditmars (1933), Schmidt and Davis (1941), Breckenridge (1944), Smith (1950), Stebbins (1954), Smith (1956), Wright and Wright (1957), Smith (1961), Anderson (1965), Platt (1969), Morris and Smith (1981), Johnson (1987), Ernst and Barbour (1989), Collins (1993), and Powell et al. (1998).

Weaver (1965) and Kroll (1976) illustrated dorsal and lateral views of the skull, and premaxillary, ectopterygoid, maxillary, pterygoid, and quadrate bones. Meylan (1982) illustrated the ventral view of the pterygoid. Karyotypes were figured in Baker et al. (1972).

• **DISTRIBUTION.** *Heterodon nasicus* ranges from southwestern Manitoba, southern Saskatchewan, and southeastern Alberta, Canada, and western Minnesota throughout the Great Plains to northern Zacatecas, San Luis Potosí, and Aguascalientes, México. Relictual populations occur in southeastern Minnesota, northwestern Iowa, eastern Nebraska, western Illinois, northwestern and southeastern Missouri, central Wyoming, and northwestern Colorado. Smith and Mittleman (1947) reported on a specimen collected in Indiana that was most likely a result of human introduction. Collins (1964) mentioned the possible occurrence of *H. nasicus* in western Kentucky. Habitat associations have been undertaken by Schmidt (1938), Bogert and Oliver (1945), Conant (1978), Brown and Moll (1979), Brown (1982a,b), Reynolds and Scott (1982), and Webb (1984).

Western hognose snakes are restricted to the sandy soils of the short grass, mixed grass, and savanna communities in the west-central portion of the United States. Populations appear to be highly correlated with the presence of coarse alluvial and marine deposits (Eckerman 1996). In Arizona, Gloyd (1937) found this species restricted to the eastern plains area. The northern distribution and that of relict populations in Illinois are limited by soil and temperature conditions, and are closely associated with the Prairie Peninsula, as defined by Smith (1957) and Conant (1978). Brown (1982a,b) associated *Heterodon n. nasicus* with the plains and Great Basin grassland biome, and *H. n. kennerlyi* with semidesert grassland, whereas Webb (1984) associated *H. n. kennerlyi* with the mesquite-grasslands within the Mazatlan-Durango Region of the Sierra Madre Occidental of México. Bogert and Oliver (1945) considered *H. n. kennerlyi* a plateau dwelling species in Sonora, México, with the Sonoran desert acting as a barrier preventing the species from entering California or Baja California.

The species is listed in several regional guides and literature for specific regions is provided in annotated bibliographies: Arizona (Woodin 1953, Lowe 1964), Arkansas (Vance 1985), Colorado (Maslin 1959, Lowe 1964, Smith et al. 1965, Hammerson and Langlois 1981, Hammerson 1982), Illinois (Garman 1891, Stanley 1941, Smith 1961), Iowa (Guthrie 1926, Christiansen 1981, Christiansen and Bailey 1986), Kansas (Smith 1950, 1956; Collins 1974, 1982, 1993; Collins and Collins 1991), Minnesota (Breckenridge 1944, Oldfield and Moriarty 1994, Busby et al. 1996), Missouri (Anderson 1965, Johnson 1987), New Mexico (Degenhardt et al. 1996), North Dakota (Wheeler 1947, Wheeler and Wheeler 1966), Oklahoma (Webb 1970, Carpenter and Krupa 1989, Sievert and Sievert 1993), South Dakota (Over 1923), Texas (Brown 1950; Tennant 1984, 1985; Dixon 1987, 1993; Vermersch and Kuntz 1987), Utah (Woodbury 1931), Wyoming (Baxter 1947, Baxter and Stone 1980, Corn et al. 1984), México (Smith and Smith, 1973, 1976), and Canada (Froom 1972, Preston 1982, Russell and Bauer 1993).

Heterodon nasicus was classified as endangered, threatened, or of special concern by Cook (1970), Stewart (1974), Nordstrom et al. (1977), Coffin and Pfannmuller (1988), Herkert (1992), and Frank and Ramus (1994). Conservation and management were discussed by Dodd (1987).

• **FOSSIL RECORD.** *Heterdon nasicus* is known from the following Pleistocene deposits: Blancan of Kansas (Brattstrom 1967); Irvingtonian of Texas (Holman 1965); and Rancholabrean of Oklahoma (Brattstrom 1967, Holman 1986), Texas (Hill 1971, Holman 1963), Kansas (Brattstrom 1967), and New Mexico (VanDevender and Worthington 1977).

Auffenberg (1963), Holman (1963, 1964, 1965), and Meylan (1982) provided vertebral characters for separating *Heterodon nasicus* from *H. simus*, but Dowling (1958) and Parmley (1988) were unable to find a satisfactory vertebral character to separate *H. nasicus* from *H. platirhinos.*

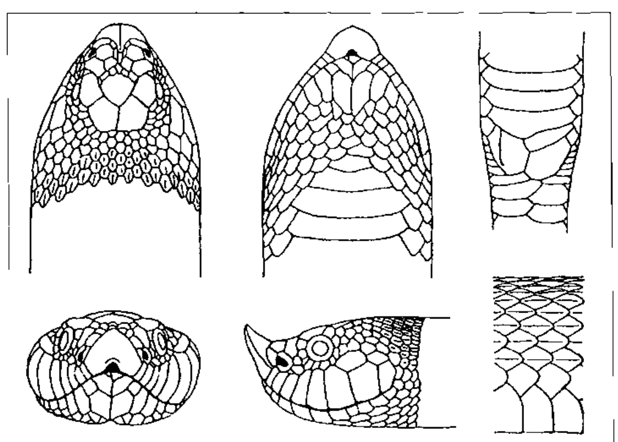


FIGURE 2. *Heterodon nasicus nasicus* from South Dakota (from Cope 1898 [1900]).

Brattstrom (1967), Platt (1969), Hill (1971), Holman (1977), Van Denvender and Worthington (1977), Holman (1981, 1986), Meylan (1982), and Ernst and Barbour (1989) summarized the known fossil records. Meylan (1982), Holman (1995), and Eckerman (1996) discussed the historical biogeographic context of these fossils.

Material from Pliocene deposits at Wendell Fox Pasture Site and Fox Canyon Site (Meade County, Kansas) was referred to *H. plionasicus* (Peters 1953).

• **PERTINENT LITERATURE.** Platt (1969) and Eckerman (1996) provided the most comprehensive reviews available on the biology of the species. The papers cited in the distribution section above contain some ecological information. Further information on **ecology and distribution** can be found in Baird (1859c), Coues (1875), Yarrow (1875), Bocourt (1886), Cope (1896, 1900), Brown (1901), Branson (1904), Ruthven (1910), Van Denburgh (1922), Over (1923), Ortenburger (1927), Burt and Burt (1929a,b), Burt (1933, 1935a,b), Ditmars (1933), Burt and Hoyle (1935), Dunn (1936), Dunkle and Smith (1937), Gloyd (1937), Evans (1940), Smith (1943, 1991), Breukelman and Smith (1946), Breukelman and Clarke (1951), Mosimann and Rabb (1952), Webb and Ortenburger (1953), Stebbins (1954), Oliver (1955), Campbell (1956), Gehlbach and Collette (1959), Minton (1959), Moll (1962), Dodge (1963), Collins (1964), Banta (1968), Cochran and Goin (1970), Scott (1970), Berberich et al. (1971), Bauerle (1972), Shaw and Campbell (1974), Creusere and Whitford (1976), Means (1976), Pendlebury (1976), Axtell (1977), Axtell and Haskell (1977), Conant (1978), Ballinger et al. (1979), Lardie (1979), Braddell (1984), Cook (1984), McCoy (1984), Webb (1984), Censky and McCoy (1985), Lynch (1985), Tanner (1985), Pérez-Ramos (1987), Vermersch and Kuntz (1987), Lazcano (1988), Ernst and Barbour (1989), Roth et al. (1989), Cobb and Cobb (1991), Kugelberg (1991), McCrystal (1991), Stoops and Wright (1992), Taggart (1992), Chiszar and Smith (1993), Russell and Bauer (1993), Busby et al. (1994), Travis et al. (1996), Carr and Stuart (1997), and Vazquez-Diaz et al. (1998a,b).

Systematics and/or phylogenetic studies include Cope (1875), Boulenger (1894), Dunkle and Smith (1937), Smith and Taylor (1945), Edgren (1952a,b, 1953a), Schmidt (1953), Smith and Smith (1962), Marx and Rabb (1972), Platt (1983), and Eckerman (1996).

Works on **historical biogeography** include Axtell (1977, the role of lacustrine environments in the Chihuahua Desert of Mexico and adjacent United States on the differentration of two subspecies); Maslin et al. (1958, Gambel's excursions into the Southwest during the 1840s), Smith and Buechner (1947, the Edwards Plateau, Balcones Escarpement, as a distributional barrier in Texas); and Smith and Chiszar (1996, a corridor across southern Wyoming as a route across the Pacific slopes). Other **biogeographical studies** were by Brown (1904), Ruthven (1908), Jameson and Flury (1949), Edgren (1952a), Smith (1957), Smith and Smith (1962), Banta (1968), Morafka (1977), Conant (1978), Mecham (1979), McCoy (1984), and Dixon (1987).

Data on **food habits and diet** are organized by topic: **general** (Brons 1882, unsuccessful attempt to swallow a *Terrapene ornata*; Branson 1904; Ruthven 1910; Burt and Burt 1929a; Force 1930; Little and Keller 1937; Breckenridge 1944; Marr 1944; Munro 1949a; Stebbins 1954; Edgren 1955; Fouquette and Lindsay 1955; Smith and White 1955; Gehlbach 1956; Diener 1957; Wright and Wright 1957; Gehlbach and Collette 1959; Smith 1961; McKinney and Ballinger 1966; Platt 1969; Scott 1970; Arnold 1972; Kroll 1976; Pendlebury 1976; Barton 1980; Murphy and Dloogatch 1980; Preston 1982; Collins and Collins 1991; Iverson 1990, 1991; Collins 1993; Busby et al. 1994; Oldfield and Moriarty 1994; Degenhardt et al. 1996; Kolbe et al. 1999, eggs of *Chrysemys picta*), **body form in relation to feeding habits** (Pough and Groves 1983), **intraspecific oophagy** (Hammack 1991, Mitchell and Groves 1993), **venom or saliva toxicity** (Bragg 1960, McAllister 1963, Anderson 1965, Kroll 1976, Gans 1978, McKinstry 1978, DeLisle 1982, Tennant 1984, Lowe et al. 1986, Hornfeldt and Keyler 1987), and **diet in captivity** (Baxter and Stone 1980, Burt and Burt 1929a, Force 1930, Swenson 1950, Fouquette and Lindsay 1955, Beale 1960, Platt 1969, Lowe 1997).

Studies of **reproduction and growth** have included the following: **general** (Fitch 1970), **courtship** (Platt 1969, Preston 1982, Rehak 1990), **oviposition** (Iverson 1975, 1995; Platt 1969; Mattison 1992b), **ovarian cycle** (Platt 1969), **spermatogenetic cycle** (Platt 1969), **hemipenial structure** (Cope 1900; Edgren 1952a, 1953b; Platt 1969), **egg and clutch sizes** (Breckenridge 1944; Marr 1944; Munro 1949b,c; Moore 1953; Edgren 1955; Wright and Wright 1957; Sabath and Worthington 1959; Sabath 1960; Wheeler and Wheeler 1966; Platt 1969; Iverson 1975, 1995; Ferguson et al. 1982; Preston 1982; Fitch 1985; Seigel et al. 1986; Ernst and Barbour 1989; Collins and Collins 1991; Mattison 1992a; Collins 1993; Dunham et al. 1994; Oldfield and Moriarty 1994), **clutch mass in relation to body weight** (Packard et al. 1977, Seigel et al. 1986), **incubation period** (Platt 1969, Tennant 1984, Rehak 1990, Collins and Collins 1991, Mattison 1992b, Collins 1993, Dunham et al. 1994), **hatching and hatchlings** (Munro 1949c, Platt 1969), **growth and maturity** (Moore 1953; Wright and Wright 1957; Platt 1969,1984; Mattison 1992b), **maximum size** (Wright and Wright 1957, Bowers 1967, Ernst and Zug 1996, Painter et al. 1996, Powell et al. 1996, Kolbe et al. 1999), **longevity** (Bowler 1977, Snider and Bowler 1992, Dunham et al. 1994), **sperm storage in captivity and parental care** (Bakker 1997), and **husbandry and captive breeding** (Lowe 1997).

Studies of **habitat relationships and behavior** include: **social behavior** (Kroll 1973, Carpenter and Ferguson 1977, Ferguson 1977, Lord 1982, Reynolds 1982, Ernst and Barbour 1989, Ford et al. 1991), **population density, survivorship, and recapture rates** (Arnold 1972, Turner 1977, Parker and Plummer 1987), **activity patterns** (Gibbons and Semlitsch 1987, Mendelson and Jennings 1992), **daily and seasonal activity** (Reynolds 1982, Gregory et al. 1987), **temperature tolerance and preferred body temperature** (Lillywhite 1987), **burrowing behavior** (Breckenridge 1944, Davis 1946, Edgren 1952a, Platt 1969, Collins and Collins 1991), **predation** (Over 1923; Edgren 1955; Greene and Oliver 1965, on roadkilled specimens; Platt 1969; Blair and Schitoskey 1982; Ernst and Barbour 1989; Collins 1993; Kolbe et al. 1999), **defensive and death feigning behavior** (Edgren 1955; Platt 1969; Gehlbach 1970; Greene 1973, 1994; McDonald 1974; Shaw and Campbell 1974; Kroll 1977; Voorhies and Corner 1977; Sexton 1979; Walls 1979; Lord 1982; Preston 1982; Hunziker 1990; Collins and Collins 1991; Collins 1993; Busby et al. 1994), **dorsal pattern as antipredator strategy** (Jackson et al. 1976), **mimicry** (Campbell and Lamar 1989, Hammer 1990, Hunziker 1990), **human envenomation** (Morris 1985, Hornfeldt and Keyler 1987), **sexual dimorphism in size and coloration** (Edgren 1958, Smith 1961, Platt 1969, Collins 1993, Shine 1993, Eckerman (1996), **olfaction and chemically elicited behavior** (Weldon 1982), and **species diversity and seasonal abundance** (Reynolds 1982, Ford et al. 1991).

References to **physiology** include: **temperature, energetics, and physiological ecology** (Kroll 1973, Packard et al. 1977, Lillywhite 1987), **bradycardia during death-feigning** (McDonald 1974), **preferred body temperature** (Platt 1969, Lillywhite 1987), **pheromonal responses** (Kroll 1973, Weldon 1982, Mason 1992), **hormonal effects on brain stimulation**

and behavior (Mason 1992), **transferrins** (Dessauer et al. 1962), **adrenal gland enlargement in relation to bufophagy** (Smith and White 1955), **venom** (Gans 1978, McKinstry 1978), **venom extraction** (Hill and Mackessy 1997), **parasitism** (Edgren 1955, Hilman and Strandtmann 1960, Platt 1969), and **neoplastic and other diseases** (Jacobson (1980,1981).

Anatomical studies have dealt with: **preglottal structure** (Saiff 1975), **cranium and mandibular myology** (Weaver 1965, Kroll 1976, Tennant 1984, Langebartel 1968), **dentition and jaw structure** (Edgren 1952a, Kapus 1964, Kroll 1976, Weaver 1965, Platt 1969), **hyoid and associated muscles** (Langebartel (1968), **salivary and Harderian glands** (Kapus 1964, Kroll 1976), **Duvernoy glands** (Taub 1967, De Lisle 1982), **vertebral structure** (Brattstrom 1967), **cloacal sacs and glands** (Kroll 1973), **testicular histology** (Goldberg and Parker 1975), and **umbilical scar position in neonates** (Edgren 1958).

• **REMARKS.** Designation of the holotype is uncertain and confusing. Baird and Girard (1853b) gave a detailed description of the type, a juvenile collected by General S. Churchill from "Texas." Yarrow (1882) did not list a USNM specimen from the Rio Grande nor one collected by Churchill, but listed two "types," USNM 1285 from the Red River, Arkansas, and USNM 4863 from Santa Fe, New Mexico.

Cope (1900) also listed USNM 4863 as the type, but placed USNM 1285 farther down on his list of USNM specimens, with no type designation. Cochran (1961) listed no type for *H. nasicus*. According to de Queiroz (1993, pers. comm.), "the first ledger has an entry (made in 1858) indicating that a specimen assigned the number USNM 1272 is the type of *Heterodon nasicus*. The data agree with Baird and Girard's statement concerning the collector ('Gen. Churchill') and locality ('Texas'). 'Rio Grande' was written in pencil above the original locality, which agrees with a statement made by Baird and Girard (1853b), although this cannot explain why both Yarrow (1882) and Cope (1900) stated "that a different specimen (USNM 4863) is the type of *H. nasicus*." Webb and Eckerman (1998) concluded that the designations of USNM 1285 and USNM 4863 as type specimens was erroneous. They also concluded that Edgren's (1952a) restriction of the type locality to Amarillo, Texas is invalid, because USNM 1272 is recorded as missing and a neotype USNM 1249 was assigned. This specimen is similar in description to USNM 1272 and comes from Eagle Pass, Texas, where the original holotype USNM 1272, is presumed to have been collected.

Günther (1858) considered *Oxyrhina catesbyi* Gray 1836 as a synonym of *Heterodon catesbyi* Günther (1858). Both Boulenger (1894) and Schmidt (1953) attributed the name *Heterodon catesbyi* to Günther. Kevin de Queiroz (1993, pers. comm.) suspected that no 1836 paper describing *O. catesbyi* was written by Gray, and that a description actually was never published. Colin McCarthy (1993, pers. comm.) noted that the type series of *H. catesbyi* is composite, as Boulenger (1894) recognized; British Museum of Natural History (BMNH) 1946.1.4.27 (formerly BMNH 1852.9.7.7), Texas, from Brandt's collection is the only specimen idntified as *Heterodon nasicus*; the remaining specimens are referred to *H. simus*.

Additional confusion exists regarding the cotypes of *Heterodon cognatus*. R.I. Crombie (pers. comm.) noted that USNM 1250 and 1271 were the type specimens, according to the original ledger. However, in her survey of types, Cochran (in 1958) was able to find only 1271, a skin from Indianola, and that was what she reported in her type catalogue (1961). In her manuscript notes, she wrote that 1271 was supposed to have two specimens associated with it. According to the present catalogue, 1271 does have two specimens, but the second specimen lacks a tag. The second specimen now under 1271 may have been 1250, returned tagless after Cope's death. Cope freely carried specimens back and forth between USNM and ANSP and was very careless, hence the major confusion. This may actually be the second specimen from Indianola recorded by Baird and Girard and not 1250 from New Braunfels. The second specimen thus cannot be considered a type of any kind, and data are lacking to check on the fate of 1250 from New Braunfels.

• **ETYMOLOGY.** The name *nasicus* is derived from the Latin "*nasus*" (nose), in reference to the upturned snout. The subspecific name *kennerlyi* is a patronym in honor of Army Surgeon C.B.R. Kennerly.

1. *Heterodon nasicus nasicus* (Baird and Girard) Plains Hognose Snake

Heterodon cognatus Baird and Girard 1853a:54. Type localities, "Indianola [Calhoun County, Texas]" and "New Braunfels, Texas." Cotype (per Cochran 1961), National Museum of Natural History (USNM) 1271, skin, sex and date of collection unknown, collected by J.D. Graham (not examined by authors). See Remarks.

Heterodon simus nasicus: Cope 1875:43.

Heterodon simus var. *nasicus*: Garman 1883:77.

Heterodon nasicus nasicus: Cope 1898 [1900]:774. First use of present combination.

Heterodon nasicus gloydi Edgren 1952b:3. Type locality, "Wheelock, Robertson County, Texas." Holotype, USNM 5083, female, collected by Kellogg, date of collection unknown (not examined by authors).

• **DEFINITION.** *Heterodon nasicus nasicus* is a subspecies with a mostly black ventral surface and with scattered yellow pigmented patches on the ventral surface of tail, usually 23 scale rows at midbody, and a set of 9–28 scales on the snout.

• **COMMENT.** This subspecies ranges from central and eastern Texas and eastern New Mexico north through Oklahoma and Kansas to southwestern Manitoba and southeastern Saskatchewan in Canada. It is also distributed in the Prairie Peninsula (as defined by Smith 1957) in Illinois, Iowa, and Minnesota (Eckerman 1996).

2. *Heterodon nasicus kennerlyi* Kennicott Mexican Hognose Snake

Heterodon Kennerlyi Kennicott 1860:336. Type locality, "Rio Grande and Sonora," restricted to "Brownsville, Cameron County, Texas, USA" by Smith and Taylor (1950). Holotype, National Museum of Natural History (USNM) 1282, sex and date of collection unknown, collected by D.N. Couch (not examined by authors).

Heterodon simus kennerlyi: Coues and Yarrow 1878:271.

Heterodon simus var. *kennerlyi*: Garman 1883:77.

Heterodon nasicus kennerlyi: Cope 1898 (1900):773. First use of trinomial.

• **DEFINITION.** *Heterodon nasicus kennerlyi* is a subspecies with a mostly black ventral surface and with scattered yellow pigmented patches on the ventral surface of tail; usually fewer than 32 (23–32) dorsal scale rows just anterior to the vent in males, fewer than 37 (28–37) in females, and a set of 2–6 scales on the snout.

• **COMMENT.** *Heterodon nasicus kennerlyi* ranges in México from Tamaulipas, central San Luis Potosí, eastern Aguascalientes

north and west along the Coahuila Folded Belt (as described by Eckerman 1996) and enters the United States in the extreme southern Rio Grande Valley, Trans-Pecos Texas, southwestern New Mexico, and southeastern Arizona.

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